

**Remarks as prepared for delivery by
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“GEOINT: The Foundation of Intelligence”
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Thanks for that kind introduction, Julie [Smith, Group VP for Program Management Office, Oracle]. I have to tell you, it's really great to be here with so many friends, colleagues, and innovators who make up this phenomenal community. A special thanks to Robert Cardillo, Ronda Schrenk, Christy Monaco, and everyone at USGIF for all the hard work you did in pulling together this absolutely awesome symposium.

And what a great time in history for us to all come together – a time where the power of GEOINT and geospatial perspective is providing context and clarity to complex situations – to great effect.

But before I get into my remarks, if you'll indulge me for three minutes, I'd like to show a quick video. I think you'll find that it fits pretty well with the symposium theme. At NGA, we like the word “Foundation.” In fact, we like it so much, that even though we made this video before the theme was announced, the word “Foundation” was in there three times, used in three different ways.

Which is convenient for me, because as a dear friend taught me, all good things come in threes. Think about it: the Holy Trinity; Earth, Wind & Fire; the Three Musketeers (both the swashbucklers and the delicious candy bar). But I digress. Roll the clip.

[NGA's “SHOW THE WAY” VIDEO PLAYS]

All right – you no doubt noticed these words right up front: “Who? What? When? Where? Why? These questions form the foundation of human exploration. They are fundamental to knowing and understanding our world ... and they are at the heart of America's security.”

So let's talk about security. And first and foremost on everyone's mind when it comes to national and international security is undoubtedly Ukraine. GEOINT has been foundational in understanding and dealing with the ongoing conflict in Ukraine.

Hopefully most of you saw the media reports about the Chairman of the Joint Chiefs of Staff, General Mark Milley, carrying around what's come to be known as "the big green map" everywhere he goes. He brings it with him to all his meetings in the Pentagon, to White House meetings with President Biden and the National Security Council, and he brings it with him on foreign trips, such as the five-day tour of NATO front-line nations he conducted in early March – which prompted the media reports about his big green map.

An article in the *Washington Post* stated: "Maps are the most basic tools of military strategy. They allow commanders to chart a course through the fog of war; they organize the chaos of the battlefield."

General Milley's "big green map" is updated regularly, and it's classified, or I'd show it to you right now. And there's far more than just GEOINT on it. It's a product that's been thoroughly coordinated with the rest of the US Intelligence Community, and our allies. But GEOINT is its foundation – providing context and clarity to the chaotic, complex battlefield. And the *Post* article summed it up like this: "In this awful conflict, the intelligence data compiled in the map has been America's most potent weapon."

And General Milley isn't alone in his love of maps. I can't recall watching the news on TV or in open websites, and seeing nearly as many maps as we've seen since February. And trust me, we've made more than a few ourselves.

These geospatially based products have been absolutely critical in providing world leaders and military planners a common understanding of what's going on in Ukraine and its surrounding areas, so that they can concentrate their time and energy on discussing what can be done, and taking action.

And it's not just maps having tremendous impact. GEOINT in the form of commercial imagery and analytical services have been instrumental to those fighting in Ukraine, and to shaping world views of the crisis. It's even being used effectively to provide transparency, and counter Russian disinformation.

Now the totality and specific details of how GEOINT is being used to great effect is classified and sensitive. But let me at least outline some of the ongoing support by posing and answering three questions.

First, with respect to the Ukraine crisis, is NGA monitoring events there and in the surrounding regions, and disseminating GEOINT to partner nations who are engaged in joint missions?

That's a resounding yes.

And we're not doing it alone; it's a true Team of Team efforts across an extensive, partnered GEOINT community, working collaboratively to share GEOINT data, products and services in ways we've never done before.

I have to tell you, I've not only been impressed by what the community is doing, but more importantly, how our teams are doing it. Truly game-changing efforts.

Second question: To support international responses to the Ukraine crisis, is NGA providing our mission partners with access to numerous sources of GEOINT, including commercial imagery and data?

That too, is a resounding yes.

And finally, as far as what U.S. imagery companies are providing to assist NATO and the West in this situation, is NGA OK with all that, even encouraging it?

Absolutely. Heck yeah! No restrictions.

Publicly available imagery of Ukraine is now providing unprecedented public insight that until recently would've been only available through government agencies and officials. And it's helping a democratic country fight for its survival, and preserve its independence. We support and applaud those efforts 100 percent!

We're doing some new and unconventional things in Warfighter Support these days. There's one quick example at the tactical level I want to share with you.

Last month, we had teammates who went to the US European Command Area of Operations, to train some military partners on the Aerial Reconnaissance Tactical Edge Mapping Imagery System – ARTEMIS for short. It's a small Unmanned Aircraft System that's ideal when you have atmospheric conditions that aren't the best for satellite collection, like extensive cloud coverage, but you still need updated, more current GEOINT.

Due to this initiative, we now have military forces in Europe who can use ARTEMIS for high-resolution imagery, creating their own GEOINT at the tactical edge that can be easily shared at the unclassified level with international partners, and with no restrictions.

And one small but important side story: unclassified satellite imagery has proven its tremendous value during this crisis. It's also interesting and oddly coincidental that one of the most famous uses of unclassified imagery shared with the public was back in 1986, when the Chernobyl Nuclear Power Plant exploded, and the Soviet Union was forced to retract their denial about it, thanks to imagery that clearly showed burning graphite from the damaged reactor.

Of course, Chernobyl was, and is, in Ukraine. "The more things change, the more they stay the same," and the value of broadly sharing foundational GEOINT truth is proving to be timeless.

All right, let me move on to the second use of the word “Foundation” that you saw in our opening video: “At NGA, the answers to these questions form the foundation of our mission. Everything on Earth, from its watery depths to its highest peaks, can be measured in space and time.”

As most of you know, we have an entire department whose core job is foundation – our Source Foundation Department – with experts in bathymetry, topography, aerography and geodesy, helping us meet our statutory obligations to provide Safety of Navigation products and services, and precision targeting to support our forces operating around the clock and around the globe.

And just like the rest of our GEOINT disciplines, the Foundation GEOINT business has changed dramatically over the past several years – continually evolving to get faster, more precise, and more resilient.

I want to highlight three Foundation GEOINT projects we’ve been working on.

The first one is a backup to GPS, which is prudent for us all to be planning for these days. It’s called Magneto. It’s all about Magnetic Navigation, or MagNav for short. It doesn’t use the magnetic field generated by the Earth’s molten core – which constitutes more than 95% of the observed magnetic signal. Instead, it uses the magnetic field frozen in the Earth’s crust.

It’s not quite as accurate as GPS, but it’s a great passive system – all weather, day-and-night, and pretty much impossible to spoof or jam. As a backup to GPS, it offers resiliency. We’ve already got partners in the Navy and the Air Force requesting MagNav products – they already see the value, and we think others will too.

Here’s another cool Foundation project that I’d like to highlight for you, and I mean literally cool. (And yes, that was a bad Dad weather joke). I also want to give a big “Bravo Zulu” to our Coast Guard shipmates for helping us out with this one.

We sent a couple of NGA officers with gravimeters on a Coast Guard cutter traveling through the famed Northwest Passage. They collected gravity data in this Arctic region where none had ever been collected before. And what a privilege for them to be able to collect their own marine gravity, with their own gravimeters, for the first time ever.

Things are changing rapidly in the Arctic, and that part of the planet is taking on increased strategic importance – this is critical data for us to have. You’ll hear more about the Arctic tomorrow morning from the Principal Deputy Director of National Intelligence, Dr. Stacey Dixon – one of my favorite people in the word, and a proud NGA alum.

The final Foundation project I want to share with you is slated to become operational by the end of this month. It's called the Source Maritime Automated Processing System, or SMAPS for short, and it basically speeds up and simplifies navigation warning alerts.

Our Maritime Safety Watch desk gets almost a thousand messages a day on Safety of Navigation issues: icebergs, man overboard, missile and rocket launches, military exercises, pirates, sea monsters, you name it.

They take all those individual reports, then organize and validate them, and then they issue warning broadcasts. We issue in the neighborhood of 30 to 40 warning broadcasts every day. NGA and our predecessors have been providing this service since 1907.

SMAPS works with natural language processing and basic machine learning, to improve the system, so that watch officers can focus on analysis, and turn over the data administration to the software. That reduces the time it takes from receiving incoming messages to sending out alerts to the Navy, the Coast Guard, and commercial mariners by up to 50 percent. It also reduces all the standard human error. This effort is literally going to help save lives, and it's a great example of the power of partnering with machines.

All right, as long as we're talking about improving how our humans partner with machines, let me switch to some fairly recent news. At the end of last month, the White House delivered President Biden's budget request to Congress for Fiscal Year 2023. In there, you may have noticed something interesting.

In the budget, NGA gains operational control of Project Maven's GEOINT A.I. services and capabilities from the Office of the Under Secretary of Defense for Intelligence and Security. That includes responsibility for labeled data, A.I. algorithms, Test and Evaluation capabilities, and the platform. You'll likely hear more about this from Secretary Moultrie tomorrow; but from the NGA perspective, we very much appreciate his confidence, and this tremendous opportunity.

We already have ongoing efforts to leverage A.I., and apply machine-learning algorithms to enable GEOINT analysis at scale. This move brings together two major DOD A.I. & M.L. efforts under one roof. And we're proud that our close partnership with the OSD staff is actually what created Maven in the first place. We take seriously this opportunity to provide strategic leadership and a corporate approach to GEOINT A.I. investments.

In the months to come, we'll be calling on industry, as we progress with this great responsibility. We want to move forward together, so we can deliver GEOINT at the pace that our warfighters and decision makers need. We have to be able to keep up with rapidly emerging digital trends. We have to be able to accelerate our ability to provide detections at the speed of mission, to give our customers tactical, operational and strategic advantage.

So starting next fiscal year, we'll have complementary Computer Vision efforts that will deliver automated GEOINT detections to both intelligence analysts and warfighters, in our key role as a Combat Support Agency.

We'll provide the subject matter experts: humans who can train the machine, evaluate it, and make sense of the output. We'll bring together those disparate, sometimes siloed communities of Machine Learning experts, data scientists, GIS experts, and imagery analysts, to improve A.I. model performance, develop standards, and lead interoperability efforts for the GEOINT community.

The bottom line is that we'll be able to lead and coordinate the GEOINT community in the A.I. programs that have already been started, and continue applying them directly to mission.

These programs from us, NRO, and elsewhere in DOD have been generating detections and producing new GEOINT, making us faster and better in how we do our business. In the not-too-distant future, these efforts will help give us our "millions of eyes" to see the unseen. And when you combine all that with the authorities of the GEOINT Functional Manager, it means we can finally bring together all these GEOINT Computer Vision efforts, and show the way to the future.

If this topic piques your interest, we'd like to invite you to the Government Hub on Wednesday at 12:45. We have a panel who will be talking about our "Computer Vision Quest."

Something else worth digging into is the public launch of (you guessed it) three key technical initiatives: Our updated *Tech Focus Areas*, our Common Operations Release Environment (or NGA CORE for short), and our new guide called *The NGA Software Way*. They're all connected, and they're all related to how we'll achieve our Mission Imperatives.

You received a copy of our latest *Tech Focus Areas* in your conference packet. It's focused on our Mission Imperatives, which determine how we allocate our time, our energy, and our resources. These imperatives, and the technology needs within them, are crucial to understanding where we're heading. And we know that the only way we can make them a reality is as a team, so we look forward to working with you to deliver on these together.

Near the end of that pamphlet, you'll see a reference to NGA CORE. NGA CORE is an architectural transformation for us, and an important part of our Agency's future. It provides a common environment for modern software development and operations.

CORE is where we'll build and operate software, and *The NGA Software Way* shows how we'll deliver useful software, faster. When we put out a draft of this document last year, as a Request for Information, we got more than 340 pages of industry feedback, and we thank you all for that. We took notes on every page, and we're excited to publish this new, actionable, 12-page guide based on industry best practices.

One last thing about our *Tech Focus Areas*: the updated version starts with something new – a graphic that explains where we're heading, as an Agency, and as a community. You can see that our workflows are changing from human-initiated to machine-initiated. We need to make these changes in order to increase our speed, and stay ahead of the growing amount of GEOINT created each and every day. You can see that our data types and sources are changing – from U.S. Government-prioritized to all data sources that come from different parts of the innovation ecosystem. We'll simply get better outcomes from that increased diversity of sources. And we're moving from high side data aggregation to using the lowest possible domain. Our products are more accessible that way.

These concepts aren't new, but we've never put them on paper this clearly or publicly before. We realize these changes won't be easy, but as I've told Team NGA: "Hard is authorized." We all know that we need to continually change and improve, in order to deliver on our mission.

If this topic piques your interest, we'd like to invite you to the Government Hub tomorrow at 1:30. We have a panel who will be talking about our *Tech Focus Areas* in greater depth at that time, and location.

All right, let's go back to our opening video – here's the third and final time it mentioned the word "Foundation": "Our work is foundational, it is advancing, and it is far from finished. We will continue to explore the Earth, and also, the partnerships, tools, and technologies needed to meet America's geospatial demands."

It is far from finished.

And together with the rest of the Intelligence Community, we've been able to be a key part of the how the West has helped Ukraine prevent Russia from overrunning Kiev, and installing a puppet government subservient to Russian control. Today, on the 61st day of the war, Ukraine is bravely and impressively fighting on. Partnerships are critical to the ongoing success.

Along with our people, our partnerships are the very foundation of what makes NGA – and the entire GEOINT community – work so well. Our people and our partnerships are our strategic competitive advantage

Our competitors wish they had a key partner like NRO – where our relationship is the strongest it's been in our respective histories – or strong, collaborative partnerships like we enjoy across the U.S. Intelligence Community. Great partners like DIA and NSA.

We'll hear a video message from Lieutenant General Berrier on Wednesday about the need to tightly integrate HUMINT, MASINT, SIGINT, OSINT, and GEOINT. And we'll hear from GEN Nakasone in person tomorrow, about how he feels personally responsible for providing a comprehensive, layered network defense that ensures GEOINT insights reach our customers securely.

Working together, we all make each other much more effective. Our competitors also wish they had friends in industry like we do – the commercial world has stepped up to the plate on Ukraine, and absolutely knocked it out of the park.

And they wish they had academic partners like we do. Our Education Partner Agreements and Cooperative Research & Development Agreements – with so many great universities – have not only established cutting-edge research critical to improving our capabilities, but a pipeline for the future GEOINT analysts, imagery analysts, data scientists, geodesy scientists, and other STEM experts we all need.

And our competitors really wish they had international partners and allies like we do. This crisis has clearly demonstrated how strong and valuable our international partnerships are in the GEOINT realm. We've moved way beyond sharing information. We're sharing mission, sharing technology, and sharing tactics, techniques and procedures.

And all involved in working this crisis together are taking time every day to be self-critical, to explore ways that we can be better, and faster, and to implement continual change. We're doing things today that we hadn't even imagined at the onset of this crisis, and there's no going back!

And course, as a Combat Support Agency, we're all about the troops. First thing this morning, we heard a great example from GEN Clarke on how important it is to "Be first with the truth," and how well our partnership works at SOCOM. Having served there myself, it warms my heart to hear about the strength and scope of our partnerships with our Combatant Commands, and our operational and tactical forces.

People and partnerships ... partnerships and people.

As far as our people, they've now been through the crucible of COVID, and have emerged stronger, smarter and better from the experience. At NGA, when we initially dealt with the pandemic, we committed to taking all actions necessary to protect and preserve our force and families, while continuing to meet the mission-critical needs of the Nation. That remained our North Star.

We also committed to not only surviving the pandemic, but to using it as an opportunity to reimagine how we do our business, and as a catalyst for change. The women and men of the Agency unquestionably nailed it, and we're witnessing the benefits of how we've grown in how we've responded to this crisis – committed to being collaborative, innovative, inclusive and agile in everything we do.

We also remain committed to Diversity, Equity, Inclusion and Accessibility. It's just obvious that we're so much more effective when our team is made up of people coming from a variety of backgrounds, possessing a wide spectrum of skill sets and experiences, and we create the environment where each and every talented individual on our roster plays and contributes.

This is not just a good, and right thing to do, it's about warfighting excellence, and being the very best we can be. This is another area where we're committed to getting better each and every day, in pursuit of strengthening our team, and being excellent.

There's a famous quote by Verna Myers that says: "Diversity is being invited to the party. Inclusion is being asked to dance." We'll take it a step further, and establish Belonging. Ensuring everyone has the opportunity to come, to dance, and to get to pick the music.

April is Autism Acceptance Month, and I hope you caught the *CBS This Morning* segment that ran last Thursday about our Neurodiverse Federal Workforce Pilot program. We're really proud of it. The goal is to create a template for recruiting neurodiverse talent for U.S. Federal Government agencies. It's also been a great opportunity for us to learn how to better support neurodiverse employees who already work at NGA.

I encourage you to watch the segment, and think about this: if we hadn't taken the steps to pursue this program, we wouldn't have found the incredibly talented officer who's showcased by CBS. We would not have her talent on our team, and we would be less capable. We're in competition for our nation's best and brightest, and the wider we cast our nets, the better off we'll all be.

All right, I started with the current situation in Ukraine; now I'd like to finish by comparing it to the past – 60 years ago.

1962 was the year of the Cuban Missile Crisis, and it was also a time when the world was anxiously obsessing over maps, and imagery from the skies above. Just as they do now, those photographs told a story. The photos from one of our predecessor agencies, the National Photographic Interpretation Center, were foundational intelligence.

But it's important to remember that they weren't the only intelligence. They didn't exist in a vacuum. SIGINT from Cuba provided the general picture of the Soviet military buildup. HUMINT sources provided tipping and cueing, and gave us details about Soviet missile systems, so imagery analysts could identify them. And then when they did identify them, they didn't actually "solve" the missile crisis.

But what they did do was provide the President and his team, including the U.S. Ambassador to the U.N. Adlai Stevenson, concrete proof about Soviet aggression and outright lies. They delivered about two weeks of decision space and decision advantage that Khrushchev never thought President Kennedy would have in advance.

That's how it worked, and that's how it still works for GEOINT, working with the broader IC. We provide the time, space, and insights needed to make the right decisions. And we're awfully proud for the opportunity to do so.

Sixty years ago, our predecessors were called upon to do truly great things. They rose to that moment. And so did their successors for the next six decades. And so will we – as an Enterprise.

Looking at the parallels today with Ukraine: How are we going to do, in these uncertain times? Well, in my opinion, NGA, the National System for GEOINT, the Allied System for GEOINT, our other international partners, and our teammates in academia and industry – we were absolutely made for times like this.

It's when we're at our very best.

There's every reason in the world to believe that 60 years from now, your grandkids and great-grandkids will remember what the overall GEOINT Enterprise did in 2022. They'll still be talking about you, because this is our defining moment. And you are the foundation of our success.

People and partnerships ... partnerships and people. It's been my experience, throughout my career, that as you lose talent, you gain talent, and the Team continues to get stronger. We have some recent and upcoming changes in some senior leadership positions that I want to ensure you're all tracking.

Our new Deputy Director, Tonya Wilkerson, brings absolutely phenomenal skills and experience to our Agency from NRO and CIA. We're beyond fortunate to have her. She is a true servant-leader, and she's already having tremendous positive impact.

And our new Senior Enlisted Advisor, Command Sergeant Major T.J. Baird, brings unparalleled positivity, and is spearheading some new initiatives to strengthen and expand our partnerships, and truly tap into the talents we have in our uniformed technical experts across the Services.

If you'd like to meet them, T.J. will be at the NGA Booth today at 1:00, and Tonya will be there tomorrow at 10.

Also here at the Symposium, getting a head start, is Brigadier General Max Pearson from the Air Staff. He'll be joining us as our Associate Director for Operations, replacing the legendary Major General Charlie Cleveland. We'll be bringing Max on board at the end of June.

As for me, my plan to stay on the job for 12 years was unsuccessful. Unless you count the pandemic years as "dog years" – which I do.

Taking the helm from me in June will be a brilliant U.S. Navy officer who's been my relief in three previous jobs, Vice Admiral Trey Whitworth. I know he's looking forward to meeting you. He'll be joining us here tomorrow evening, and most of Wednesday, before heading back to the Pentagon, and continuing to carry out his current duties as the Joint Staff J2.

All right, it's become a mini-tradition for me to play something at the end of my speeches. So that's how I'd like to close this one too, before we switch to Q&A. Listen up.

[AUDIO OF "HOTEL CALIFORNIA" PLAYS]

This song emphasizes something I tell everyone who departs NGA, and something I've been telling people departing commands I've been at throughout my career: We're like the Hotel California. You can check out any time you like, but you can never leave.

That applies to everyone on the Team ... even the Director.

Although I'm coming to the end of my time at NGA, and the end of my time in the Navy, I will stay connected to this community, because to me, you're family.

I have been honored, humbled, and extremely blessed, for the opportunity to serve with the women and men of Team NGA. It's been the absolute pleasure of my professional career.

Thanks very much. All right, let's turn this into a conversation. I'd love to take some questions.

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